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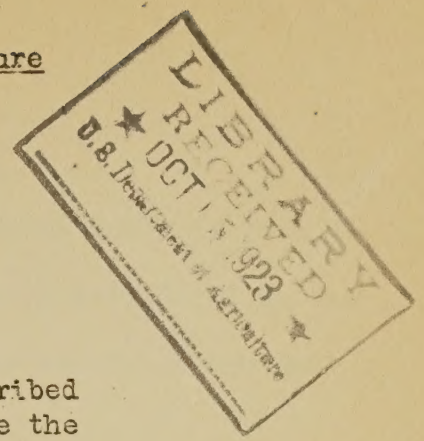
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United States Department of Agriculture

SUMMARY OF
DAIRY EXHIBIT

No. 1



The exhibits which are briefly described on the following pages seek to bring before the dairyman, the dairy manufacturer, and the consumer information and improved practices which should prove beneficial to them, and to bring to the public a better understanding of the work of the Department of Agriculture along dairy lines. The exhibit is grouped in units bearing the following captions:

Better Dairy Cattle - Scenic
Better Dairy Cattle - Scenic
Better Dairy Cattle - Scenic
Cooperative Bull Associations
Cow Testing Associations
Dairy Cattle Breeding - Scenic
Livestock Improvement
Feeding Dairy Cows
Cost of Milk Production
Diseases of Dairy Cattle
Dairy Statistics
Educational Milk Campaigns
Milk for Children
Milk for the Family
Clean Milk
Cost of Marketing
Butter Inspection Service
Marketing Organizations
Market News Service
Package Standardization
Foreign Markets

Each subject is treated in a booth 13' wide across the face, 8' deep, tapering to a width of 8' at the back. Each section of a booth is 8' long and 4' high. The booths are 7' high.

LIST OF

EXHIBITS

No. 1

The exhibits which are briefly described on the following pages took in 1914 before the Bureau, the dairy manufacturers, and the consumers, information and improved methods which would give knowledge to them, and to bring to the public a better understanding of the work of the Department of Agriculture along dairy lines. The exhibits are grouped in units bearing the following captions:

Better Dairy Cattle - Domestic
Better Dairy Cattle - Foreign
Better Dairy Cattle - Foreign
Cooperative Dairy Associations
Our Leading Associations
Dairy Cattle Breeding - Domestic
Improved Management
Modern Dairy Cows
Cost of Milk Production
Production of Dairy Cattle
Dairy Statistics
International Milk Conference
Milk for Children
Milk for the Family
Cream Milk
Cost of Marketing
Milk Inspection Service
Marketing Organization
Milk News Service
Product Examination
Product Labels

Each exhibit is placed in a booth 12' wide across the face, 8' deep, opening to a walk of 8' at the back. Each section of a booth is 8' long and 12' high. The booths are 7' high.

The importance to dairymen of using good purebred bulls is brought out by means of reproductions of two actual farms which were found in the same community. These farms show very strikingly the effect of the bull on the herd and farm.

Better Dairy Cattle

What a Poor Bull Did

One of the farms has poor buildings, scrub cattle, and a general run-down appearance. Running with the scrub cows is a bull of no particular breeding. He is the type of bull used on this farm for a number of years; and he and his kind are responsible for the low-producing cattle shown, who in turn are responsible for the general lack of prosperity. The owner of this farm had an opportunity to join a cooperative bull association about 9 years ago, but he did not take advantage of it.

Better Dairy Cattle

What a Good Bull Did

Contrasted with the run-down farm is a prosperous-looking establishment with modern barns, a milk house, silos and comfortable house. A fine herd of good-producing purebred and grade Guernseys is shown in the pasture, and with them is a purebred Guernsey bull. The bull is owned by the local cooperative bull association. This bull and others like him have been used on the herd for the past 9 years, or ever since the owner of the farm joined the bull association. The association bulls have increased substantially the production of their daughters as compared with that of their dams. This means greater production of milk, more economical production, larger returns, and a more prosperous farm and farmer.

Better Dairy Cattle

Economy of the Bull Association

Many farmers would like to use good purebred bulls, but they feel they can not afford them. A special scenic booth "Economy of the Bull Association" was prepared to show dairymen how such bulls can be obtained and kept economically, through cooperation with their neighbors. The 6 good purebred Ayrshire bulls owned by a Pennsylvania bull association are shown on one side of a judging ring. On the other side are the 19 bulls which they replaced in the community. When the association was organized, the 19 bulls owned by the 20 members were sold, and the cost of the 6 good purebred, capable of increasing the production of the herds, was divided among the 20 members. The use of these bulls was therefore obtained at a moderate cost per member, and there were 13 bulls less to feed and care for. Besides, these bulls will be rotated and it will not be necessary to buy any more bulls for perhaps 3 to 10 years.

Cooperative Bull Associations

The Department is helping farmers to organize bull associations wherever needed, and there are now about 223 bull associations in the United States. To direct attention to the advantages of this form of organization, the results obtained by some of the older associations are shown. At the rear of the booth a large panorama painting shows graphically how an association is organized. In this booth also is an exact model of a Safe Keeper bull pen, so called because it is safe for the keeper and safe for the bull. Plans for this pen may be obtained from the Dairy Division.

Cow Testing Associations

To bring to the attention of dairymen the value of the cooperative

the Department has shown some of the results obtained from a study of cow-testing records. Among the "Lessons learned from cow testing" the dairyman will find, for example, that fall freshening is generally the most profitable; that cows which look alike differ widely in their ability to produce economically. It is also shown how the cow-testing association eliminates the unprofitable cows. There are now about 628 cow-testing associations in the United States, and the number is increasing.

Dairy Cattle Breeding

Value of the Proven Sire

The Department breeding experiments have brought out strongly the great value of the proven sire. In a special scenic booth on this subject are shown some of the foundation animals (Holstein) in the breeding experiment which are now at the dairy experiment farm at Beltsville, Md. Four daughters shown on the right of the Beltsville farm barnyard were purchased as heifers on the strength of their sires' proven ability to get good daughters. When they freshened they made high records for milk and butterfat production, (average age 2 years, three months) averaging 19,025.4 pounds of milk and 603.7 pounds of butterfat. Four daughters shown on the right from one proven sire also made excellent records. The present herd sire, also proven, is shown with one of his daughters that gave 20,357 pounds of milk and 702.2 pounds of butterfat as a 2-year-old.

Livestock Improvement

Livestock well bred and well cared for have greater earning capacity than inferior animals. The national campaign for better sires and better stock directs attention to the fact, and points out that good purebred sires will quickly improve the quality and productiveness of the average

herd. It shows pictorially how a purebred sire has improved the offspring as compared with the dam, in various classes of livestock.

Feeding Dairy Cows

Greater knowledge of the science of nutrition in relation to the feeding of dairy cows is essential to further progress, and with this point in mind physiological studies of the dairy cow were started by Department investigators some years ago. Some of the more striking results of these studies are presented to dairy show visitors. "Your cow is your business partner," says this exhibit. She pays big interest on feed advanced. She collects heavy indemnity on feed withheld. In this booth are shown striking examples of the effect on milk production of liberal feeding during the dry period and during the dry and lactation periods, and the effect of feeding minerals during the dry period.

Cost of Milk Production

How much does it cost to produce 100 pounds of milk? How much feed is required? How much labor is expended? Also, what is the biggest item in cost of producing milk? All of these questions and many others are answered in a booth on cost of milk production. Here will be found the requirements for producing 100 pounds of milk in terms of feed, labor, overhead, etc., and by substituting current prices any dairyman can determine the cost of producing milk on his farm. That feed is the most expensive item in the cost of milk production is shown graphically. These figures are based on intensive studies in market milk sections of the United States, and should be of interest to the producing dairyman.

Diseases of Dairy Cattle

The necessity of eradicating tuberculosis from our dairy herds is

being recognized more and more each year. The Department of Agriculture is doing a large amount of work towards eliminating this disease, and the progress of the accredited herd movement is shown--a movement that has grown by leaps and bounds since 1917, when it was first started. In the booth it is shown that one cow affected with tuberculosis may undermine the health of the entire herd. To familiarize dairymen with the effects of the disease on a cow, two large models are presented, one showing the organs of a healthy cow, and the other those of a diseased cow.

Dairy Statistics

That the dairy cow is still a relatively good market for feed is brought out in a large chart showing the spread between the feed cost of one pound of butter and the price of butter, between the years 1914 and 1921. This chart brings out some interesting comparisons between the dairy situation today and the situation before and during the war. In another chart the Department emphasizes the need for raising the average production of the dairy cows in the United States. The United States, with an average production of 3627 pounds, ranks low compared with some of the other dairy countries. The average production of cows in the various States is also shown on this chart.

Educational Milk Campaigns

Recognizing the need of utilizing large quantities of surplus milk during seasons of heavy production, and at the same time of helping to eliminate undernourishment among children, the Department has cooperated in more than 40 educational milk campaigns. These campaigns last about one week, and during that time every effort is made to stimulate consumption of milk--through lectures, window displays, posters, etc. The experi-

ence gained by Department specialists in this work has been brought together for the benefit of those who may wish to undertake campaigns. Here will be found charts showing how to organize both city and rural campaigns, suggestions for window displays, posters, newspaper publicity, essay contests, and other important factors in a successful campaign.

Milk for Children

In a booth designed especially to interest the young folks, the food value of milk in the diet of growing children is emphasized. Five milk fairies representing the five most important substances in milk, which are protein, fat, sugar, minerals, and vitamins, tell what each of these substances does to build up strong vigorous bodies.

Examples of how milk has helped children, as well as young animals to gain in weight and strength, are shown graphically. Most children like milk, but for those who do not, various ways of serving milk in soups, cocoa, etc., are shown.

Milk for the Family

While milk is especially valuable for children, it is a good food for the whole family. "From youth to old age every member of the family needs milk," is the message of this booth. Here also is shown the food value of all dairy products, how they may be used in cooking, and the substances, such as protein, fat, etc., that each product supplies in greatest abundance.

Clean Milk

In a booth devoted to clean milk the various factors are shown which have a bearing on clean milk production, from the time it is produced on the farm until it is bottled and delivered on the doorstep of the consumer.

Here are shown the results of interesting experiments on the time milk can be kept sweet. Four factors, viz., efficient cooling, sterile utensils, small-top milk pails, and clean cows, are shown to have a marked influence on the length of time the milk will keep sweet.

Cost of Marketing

The Cost of Marketing Division of the Bureau of Agricultural Economics is engaged in the study of marketing costs of various agricultural products.

Its work during 1920 with representative milk dealers in some of the principal cities of the country disclosed the following as average costs in the respective sections for the year 1919:

	Eastern		Middle Western	
	Average Cost, Cents per qt.	Percent of Total cost	Average Cost cents per qt.	Percent of Total cost
Raw material.....	10.1	62.5	9.3	63.2
Transportation.....	1.6	6.5	.4	2.6
Plant operation.....	1.4	8.4	1.2	8.2
Delivery and selling.....	2.0	12.2	2.2	14.7
Bottles and containers.....	.3	1.9	.2	1.6
General and administrative..	.7	4.3	.7	4.9
Shrinkage and spillage.....	.7	4.4	.7	4.8
	16.8	100.0	14.7	100.0

Average costs, however, are apt to be misleading, since the combination of certain high costs and low costs will produce an average with which none of the dealers costs will compare. For this reason the range of costs which produced the average will be of greater value in making comparisons.

The following table shows the range and variations of costs for 28 middle Western dealers in 1919: (Costs in cents per quart.)

Dealer	Total Cost	Raw Material	Plant Expense	Delivery Expense	Administrative Expense	Loss and Shrinkage
1	11.0	8.0	1.0	1.4	.2	.4
2	11.3	7.3	.9	1.9	.8	.4
3	11.6	8.5	1.0	1.2	.3	.6
4	11.8	7.7	1.2	2.4	.1	.4
5	11.9	8.6	1.1	1.6	.4	.2
6	12.0	8.8	.9	1.3	.6	.4
7	12.2	9.2	.6	1.7	.4	.3
8	12.4	8.2	1.2	1.7	.9	.4
9	12.8	8.2	.8	2.5	.9	.4
10	12.8	8.4	1.4	1.7	.9	.4
11	12.9	8.2	.9	3.2	.2	.4
12	13.0	8.3	1.5	2.3	.3	.6
13	13.0	8.0	2.2	1.9	.5	.4
14	13.2	9.7	.6	1.5	.5	.9
15	13.4	8.4	1.5	2.5	.7	.3
16	13.7	9.8	.8	2.0	.6	.5
17	14.1	7.9	1.4	3.2	1.0	.6
18	14.1	8.5	1.2	3.1	1.1	.2
19	14.1	8.9	1.6	2.4	.7	.5
20	14.1	9.1	1.5	2.1	1.0	.4
21	14.2	10.7	.9	1.7	.4	.5
22	15.1	10.2	1.4	2.6	.6	.3
23	15.5	9.6	1.1	3.8	.5	.5
24	15.5	9.1	1.3	2.3	2.0	.8
25	16.7	9.7	1.2	4.0	1.3	.5
26	16.9	10.0	1.4	3.8	1.2	.5
27	17.4	10.5	1.9	3.3	.9	.8
28	18.5	12.4	1.6	3.4	.5	.6

The influence of the size of the wagon load upon the delivery cost per unit was quite noticeable. The following figures are those of two dealers whose cost per route per year are practically identical.

	Dealer A.	Dealer B.
Wagon load.....delivery units*.....	276	377
Delivery cost per route per year.....	\$2,705	\$2,724
Delivery cost per delivery unit.....	2.68¢	1.98¢

*Each package of bottled fluid, and each unit of nonfluid product were counted as a delivery unit, i.e., one pound of butter, one bottle of cream, milk, etc., or one quart of bulk fluid.

It will be noticed that Dealer B is able to deliver at a much

lower cost per unit, due to the large number of units per wagon.

One may be reminded of the waste occasioned through the breakage of bottles when it is considered that, using the average costs and profits as determined by the Bureau's study, the breakage of a quart bottle filled with milk causes a total loss equivalent to the profit on 28 quarts of milk; while the breakage of an empty bottle causes a loss equivalent to the profit on 7 quarts of milk.

Butter Inspection Service

The basis for most transactions between the creamery in the country and the receiver in the market is quality of the product marketed. Quality of butter is so readily influenced by conditions on the dairy and in the creamery, and is so variable, that almost without exception, every lot of butter reaching the larger markets is subjected to inspection, as a result of which price is determined. The Bureau of Agricultural Economics has provided a service for the benefit of shipper and receiver, both of whom appreciate the value of impartial inspection by a disinterested party. Not only should the use of such a service be the means of avoiding disputes, but it should stimulate the production of butter of higher quality on account of the increased value of quality goods.

Low Scoring Butter Always Sells for a Lower Price

Average price of 92 and 88 score butter (New York City)

<u>Year</u>	<u>92 score</u>	<u>88 score</u>	<u>Difference</u>
	Cents	Cents	Cents
1919	61	57	4
1920	61	55	6
1921	43	38	5

A low score means poor butter and poor price.

How to Secure Butter Inspections

1. Notify the office of the Bureau of Agricultural Economics in the city where inspection is desired. Present inspection points are:

New York City	204 Franklin Street
Chicago	505 City Hall Square Building
Philadelphia	312 The Bourse Building
Boston	402 Atlantic Ave.
Washington	U.S. Department of Agriculture
San Francisco	510 Battery Street

2. Give date and size of shipment, also date of expected or actual arrival.

3. Indicate name and address of receiver, and name of delivering carrier if inspection is to be in car.

Inspections are made upon application from anyone having a financial interest in the lot involved.

Marketing Organizations

The importance of Farmers' cooperative organizations as agencies for improving marketing methods has been gaining rapid recognition during the past five years. The existence of about 15,000 farmers' buying and selling associations in the United States shows clearly that American farmers fully realize the importance of organized effort in securing better returns and improving service in the marketing of their products. The American farmers' faith in cooperative organization as a remedy for marketing difficulties has resulted from a realization of the need for united effort in solving common problems. The individual producer is unable to wield an influence or undertake many of the endeavors which are of vital importance to better and more economical marketing, but proper organization is proving to be an effective means for carrying out work of this kind.

Some essentials for successful cooperative marketing are:

1. A suitable contract between the producer and the association.
2. A legal form of business organization.
3. A plan of business operation which is economically sound.
4. A practical and adequate plan of financing.
5. Competent administrative supervision of all the business.
6. Efficient management of all operating parts.
7. Skilled and efficient employees in all the operating parts.
8. A volume of business which makes economical operation possible.
9. An adequate system of accounting records.
10. A progressive and sound business policy.

Every cooperative organization needs these essentials. Does yours have them?

Ten Reasons Why Dairy Farmers Need to Cooperate

1. To assemble their products most economically at country points.
2. To establish and maintain plants for handling their products at country points.
3. To become a factor and wield an influence in the marketing of their products.
4. To undertake actual commercial distribution of their products.
5. To obtain commercial efficiency in the marketing of their products.
6. To stabilize the supply in accordance with the market demand.
7. To secure for producers the services of marketing experts.
8. To reduce the cost of supplies required in marketing.
9. To eliminate speculation and waste.
10. To secure direct and orderly distribution.

BUSINESS MEN IN CITIES COOPERATE. WHY SHOULD NOT FARMERS?

Market News Service

The market news service of the Bureau of Agricultural Economics makes it possible for you to "know your markets." Through branch offices located in the important wholesale markets, which serve as local news collecting agencies, market information is assembled daily which shows current prices, movements and trend. Wholesale distributing markets which are covered regularly are in New York City, Chicago, Philadelphia, Boston and San Francisco. In addition to these, information regarding the primary cheese markets of Wisconsin is assembled daily at the Fond du Lac, (Wisconsin),

office. Employed as a part of the market news service is a leased telegraph wire system which connects all offices and makes it possible to give the current day's markets. Printed reports are prepared daily for free distribution to all who request them. The news service also includes weekly and monthly reports on various dairy products. The list of reports issued is as follows:

- Daily Market Report (Butter, Cheese, Eggs and Dressed Poultry).
- Weekly Butter Market Review.
- Weekly Cheese Market Review.
- Monthly Fluid Milk Market Report.
- Monthly Condensed Milk Market Report.
- Monthly Powdered Milk Market Report.
- Monthly Export Report.

For information regarding any of the reports write to the Division of Dairy and Poultry Products, Bureau of Agricultural Economics, U. S. Department of Agriculture, Washington, D. C.

Package Standardization

The first thing that attracts the eye of the prospective purchaser for a lot of butter is the type and condition of the package. There is an appeal in a neat and attractive package which creameries can not afford to overlook. Then after the package comes the packing. Many a sale has been spoiled because these two points were neglected. Certainly creameries which would realize the greatest returns from their product will see that their butter is properly packed in clean, sound packages before being sent to market. A good butter package must meet the following requirements: Neat and attractive; strong and durable; easily handled; easily removable cover; easily stripped; uniform as to contents; not too expensive; pack well in loading, economical in storing.

Both tubs and boxes, or cubes, are used in packing domestic butter. These are not uniform as to type, construction or size. It would appear

that, ultimately, a standard bulk butter package should be adopted for all United States markets.

Foreign Markets

The price of dairy products is now determined by world-wide conditions of supply and demand. Modern means of transportation and dissemination of market news have in a true sense brought the markets of the world closer together. It is impossible under such conditions for the different markets to get far out of line and remain so. For as soon as a shortage of butter, for example, in one market is indicated by a higher price in that market than in others, butter will be attracted to that market until because of increased supply the price declines again to the level of the other markets.

The center panel illustrates this as it applies to the London and New York markets especially. London is, of course, the greatest market in the world for foreign dairy products, and New York now tends to receive more or less, depending largely on the strength or weakness of the London market. Consequently, the price of dairy products in the United States is determined by the supply available in other countries that export and by the demand from other countries that import, as well as by home production and needs. The quantity produced and consumed in the United States is relatively very large, of course.

The right panel of the booth suggests roughly the statistics of trade in all dairy products in terms of milk. Some countries, a few of the more important of which are shown, have a surplus for export. This they must sell in competition with other countries having a surplus. All depend for their market upon the countries not producing sufficient dairy products to meet their needs. England is by far the largest importer,

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The right panel of the book suggests roughly the situation of trade in all dairy products in terms of value. Some countries, a few of the more important of which are shown, have a surplus for export. This they must sell in competition with other countries having a surplus. All depend for their market upon the countries not producing sufficient dairy products to meet their needs. England is by far the largest importer.

while some, as France and Sweden, may import temporarily, although they are normally exporters of dairy products. The volume of these various streams of foreign trade, and indeed their direction, of course, change from time to time.

This suggests the importance of the constant study of the production and consumption of dairy products in all countries of the world. The left panel indicates some of the sources of the information that is now obtained by the United States Department of Agriculture, and is available to the dairy interests of the United States at any time.

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